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PERMO-CARBONIFEROUS (GONDWANAN) PALYNOMORPHS FROM THE CHACO BASIN, ARGENTINA

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Permian and Upper Carboniferous palynomorphs were recovered from conventional cores and cuttings samples in 15 wells in the Chaco Basin, Argentina. Pollen and spores characteristic of the three Permo-Carboniferous palynozones defined by Archangelsky et al. (1980) for the Chaco Basin have been identified. Assignment of the *Cristatisporites* Zone to the Lower Permian has not been corroborated by faunal evidence. However, *Granulatisporites confluens* Archangelsky & Gamero 1979, a key component of this zone, is the basis of the *Granulatisporites confluens* Oppel-zone established by Foster and Waterhouse (1988) from the Canning Basin, Western Australia. The *G. confluens* Oppel-zone is associated with an Early Permian (Asselian) marine fauna and correlates with the *Cristatisporites* Zone in the Chaco-Parana, Paganzo, Central Patagonian, Colorado and Parana basins, of South America.

MOYERIA CABOTTII FROM THE ORDOVICIAN OF WALES, UNITED KINGDOM

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Recent work by Gray and Boucot suggests that *Moyeria* occurs abundantly only in the nonmarine and nearshore environments. Further supportive evidence has been found in North Wales where *Moyeria cabottii* has been found in abundance in the Late Ordovician (Caradoc) Capel Curig Volcanic Formation at Capel Curig. Two samples collected from mudstones above and between thick beds of welded tuff yield acritarchs of marine origin including *Arkonina*, *Baltisphaerosum*, *Dicrodiaerodinium*, *Orthosphaeridium*, *Peteinosphaeridium*, *Stelliferidium*, *Striatotheca*, and *Veryhachium*, in addition to abundant *M. cabottii* specimens. Caradoc (Soudleyan Stage) brachiopods indicating open marine conditions have been found close to the acritarch localities. Faunal, sedimentological and volcanological evidence from the surrounding area indicates that during emplacement of the tuffs, a complex interplay between subaerial, alluvial, lacustrine, and marine shelf environments existed.

Dating of sediments for recent BGS mapping in Central Wales has revealed abundant *M. cabottii* in mudstones within the Dol-y-fan Conglomerate Member of the Yr Allt Formation of the Llandrindod Wells area. Also present are acritarchs of marine origin including *Actinotodissus*, *Baltisphaerosum*, *Cymatigalea*, *Diexalophasis*, *Eupoikilofusa*, *Goniosphaeridium*, *Multiplisphaeridium*, *Peteinosphaeridium*, *Stellechinatum*, *Stelliferidium*, *Striatotheca*, *Veryhachium*, and *Vulcanisphaera*; together this assemblage sug-

gests an Ashgill age, except *Cymatigalea* and *Vulcanisphaera* which are probably recycled from the Tremadoc. Sedimentological evidence suggests the conglomerate is of latest Ashgill (?Hirnantian) age. The abundant *M. cabottii* thus suggests a nonmarine to marginal marine environment, perhaps related to regressive events during the Hirnantian glaciation.

POLLEN FOCUSSED IN LAKE SEDIMENTS: A CASE STUDY FROM LAKE O'HARA, YOHO NATIONAL PARK

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Forty-five pollen assemblages were derived from three discrete dated levels in a set of nineteen cores from Lake O'Hara (51° 21'N, 116° 21'W, 2040 masl), Yoho National Park, British Columbia. Twelve samples came from immediately above a basal contact between overlying organic and underlying clastic sediments, radiocarbon dated at about 10,100 yr B.P. Fifteen samples came from directly below Mazama tephra (about 6,800 yr B.P.) and eighteen samples from directly beneath Bridge River tephra (about 2,350 yr B.P.). These sets, providing lake-wide areal patterns of pollen assemblages at three time horizons, were used to investigate whether pollen has been differentially deposited within the lake basin.

Major assemblage components (including *Pinus*, *Picea*, *Abies*, *Alnus*) generally show differences between sets echoing the overall picture of vegetation change from the complete Holocene pollen record of one core. Despite some variability within sets, there is no consistent pattern of variability in pollen percentages, such as towards the deeper part of the lake basin, which might reflect pollen focusing. Minor (less than 2% of the pollen sum) components of the pollen assemblages (mainly NAP and spores) are more variable, and do not necessarily occur consistently within sample sets. The study emphasizes the unreliability of minor pollen assemblage components for interpretation and confirms that major components are more reliable.

SEQUENCE STRATIGRAPHY IN THE CRETACEOUS ALBERTA FORELAND BASIN; CENOMANIAN THROUGH CAMPANIAN EXAMPLES

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Sequence stratigraphy is based on the recognition and correlation of physical surfaces of erosion or non-deposition, which are interpreted as time lines. In the examples presented, marine flooding surfaces that terminate coarsening-upward facies successions (i.e., parasequences) form the basic unit of correlation. Recognition of major discontinuities may be marked by a change in stratal patterns. These changes will usually be marked by the termination or